

# **CAMP MIVODEN (PWSNO 1280030) SOURCE WATER ASSESSMENT REPORT**

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**June 5, 2001**



## **State of Idaho Department of Environmental Quality**

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## SOURCE WATER ASSESSMENT FOR CAMP MIVODEN

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within a 1,000 foot radius of your well, your water quality history, construction characteristics associated with your well or wells, and site specific sensitivity factors associated with the aquifer your water is drawn from.

This report, *Source Water Assessment for Camp Mivoden* describes the public drinking water source, potential contaminant sites located within a 1000-foot boundary around the drinking water source, and the susceptibility (risk) that may be associated with any associated potential contaminants. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

**Potential Contaminant Inventory.** The Camp Mivoden, located on Mokins Bay on the east side of Hayden Lake gets its drinking water from two wells. During the summer season, the camp serves a population of up to 200 people. Water from the two wells is combined at a manifold before testing and is chlorinated before entering the distribution system. Potential contaminant sources documented inside the 1000-foot boundaries around the wells include surface water, roads, and a septic tank/drainfield.

The map on page 5 of this report shows the well locations, the 1000-foot boundaries and approximate locations of roads, buildings and the septic drainfield relative to the wells. The wells are less than 200 feet from Hayden Lake and need to be tested to determine whether they are directly influenced by surface water. Table 1 summarizes information about the sites inventoried and contaminants that may be associated with them.

**Table 1. Camp Mivoden Potential Contaminant Inventory**

Map ID	Source Description	Potential Contaminants	Source of Information
1	Surface Water	Microbial	USGS Map
2	Roads	IOC, SOC, VOC Microbial	USGS Map
3	Septic System	IOC, Microbial	PWS File

*IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical*

*USGS= United States Geological Survey, PWS = Public Water System*

**Water Quality History.** Camp Mivoden is required to monitor quarterly for bacterial contamination. Total coliform bacteria were present in samples tested in August 1999 and in January 2000, but were absent in follow-up samples. Annual nitrate samples show concentrations ranging from 0.128 mg/l to 0.406 mg/l. The Maximum Contaminant Level for nitrate is 10 mg/l.

**Well Construction.** The Camp Mivoden wells were first drilled in November 1989. Well #1 was deepened to 350 feet in January 1990. The 6 inch steel casing and bentonite surface seal for Well #1 extend 39 feet below ground surface, terminating in a salt and pepper granite layer with soft spots, according to the well log.

Well #2, 50 feet deep, is also completed in a granite stratum. The bentonite clay surface seal and outer casing are 19 feet deep. Well #2 has an inner casing 4 inches in diameter and 0.160 inches thick extending from 10 to 50 feet below ground surface. The 1999 Sanitary Survey of the Camp Mivoden water system noted two loose bolts on the well head.

Both wells have 6-inch casings. Current Idaho Department of Water Resources standards for well construction require the wall thickness of a six-inch casing to be a minimum of 0.280 inches. The wall thickness of the Camp Mivoden well casings is 0.025 inches. Both wells are outside of the flood plain for the lake, and are protected from surface water run off.

**Table 2. Selected Characteristics of Camp Mivoden Wells**

Well	Total Depth (ft.)	Depth to Ground Water (ft)	Static Water Level (ft)	Depth of Surface Seal (ft)	Depth of Casing (ft)
Well #1	350	95	23	39	39
Well #2	50	32	22	19	50

**Well Site Characteristics.** Soils in the 1000-foot zones around the wells are generally poorly to moderately well drained, providing some protection against migration of contaminants toward the wells. The wells are drilled in a rock formation with fractures in the water bearing strata. There are no layers of silt or clay above the water table. The first water bearing stratum in Well 1 was encountered 95 feet below the surface. In Well 2, ground water was encountered at 32 feet and again at 42 feet feet.

**Susceptibility to Contamination.** A susceptibility analysis DEQ conducted on the Camp Mivoden wells, incorporating information from the public water system file, and from the well logs, ranked both wells moderately susceptible to all classes of regulated contaminants. The susceptibility analysis worksheets for your wells on pages 6 and 7 of this report show how your wells were scored. Formulas used to compute the final susceptibility scores are shown on the bottom of the worksheet.

**Source Water Protection.** This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important.

Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Camp Mivoden source water protection activities should focus bringing the wells into full compliance with Idaho Rules for Public Water Systems by implementing the recommendations in the 1999 Sanitary Survey.

It is particularly important to prevent bacteria and other surface contaminants from entering the system through the well head or the reservoir. The bolts on well head for Well #2 need to be tight. Runoff water needs to be diverted away from the reservoir, and the reservoir roof can not be used as a storage platform.

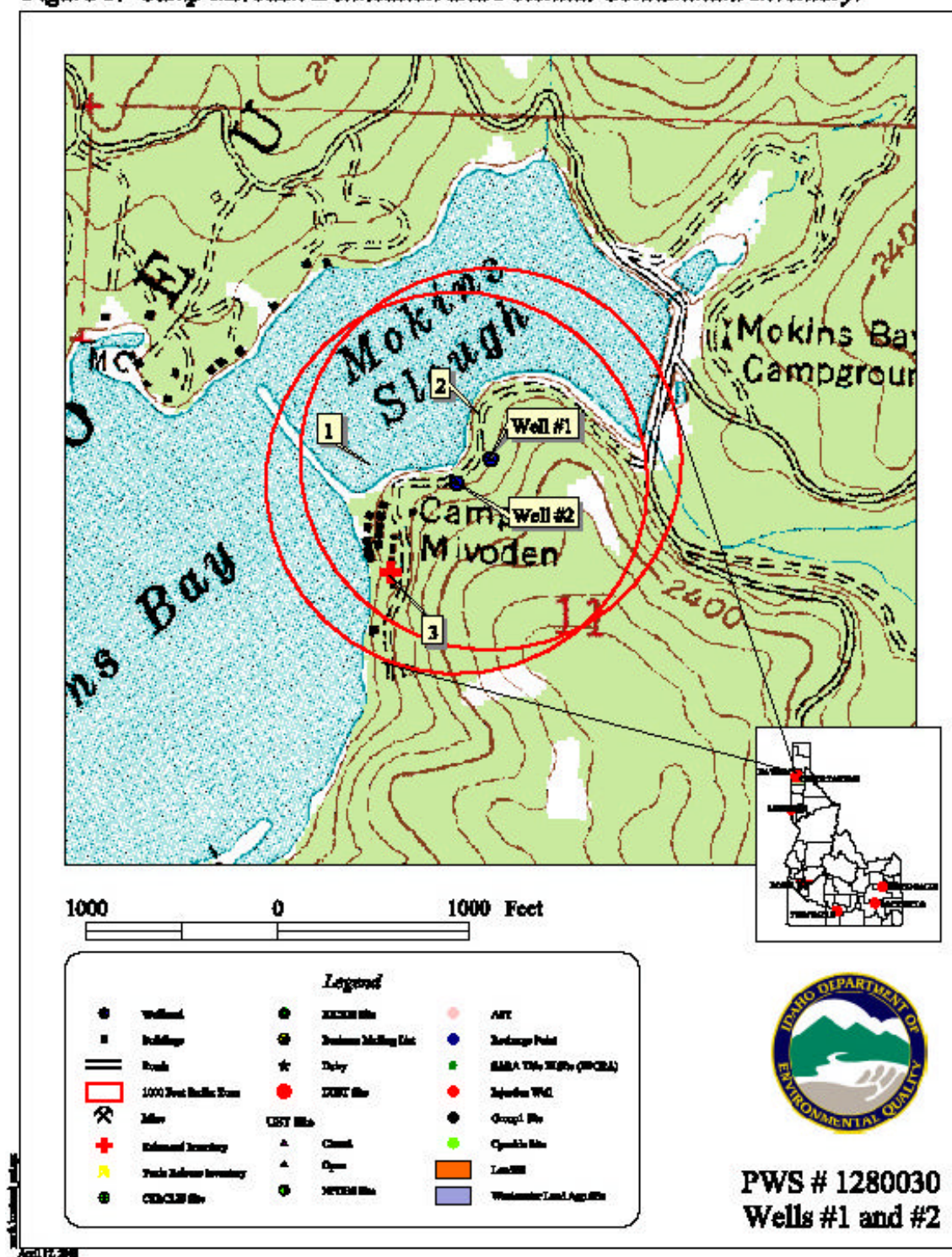
The camp should review its maintenance practices to be sure that no solvents, herbicides, road oil, dust abatement compounds etc. are used or stored within 50 feet of the wells. Because the Club doesn't have direct jurisdiction over the entire 1000-foot protection zones around its wells, it will be important to form partnerships with neighbors, and public agencies to regulate land uses that can degrade ground water quality. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

For assistance in developing source water protection strategies please contact Tony Davis at the Coeur d'Alene Regional DEQ office at 208 769-1422.

DEQ Website:

<http://www.deq.state.id.us>

Figure 1. Camp Mivoden Delineation and Potential Contaminant Inventory.



## Attachment A

### Camp Mivoden Susceptibility Analysis Worksheet

## Ground Water Susceptibility

Public Water System Name :  
Public Water System Number :

CAMP MIVODEN  
1280030

Well :  
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WELL #1

1. System Construction		SCORE			
Drill Date	1/12/90				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1999			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
<b>Total System Construction Score</b>		<b>2</b>			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
<b>Total Hydrologic Score</b>		<b>3</b>			
3. Potential Contaminant / Land Use - ZONE 1A		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Zone 1A	RANGELAND, WOODLAND,	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
<b>Total Potential Contaminant Source/Land Use Score - Zone 1A</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Potential Contaminant / Land Use - 1000-FOOT BOUNDARY					
Contaminant sources present (Number of Sources)	YES	2	1	1	3
(Score = # Sources X 2 ) 8 Points Maximum		4	2	2	6
Sources of Class II or III leacheable contaminants or Microbials	YES	2	1	1	
4 Points Maximum		2	1	1	
1000-foot Boundary contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-foot Boundary	Less Than 25% Agricultural Land	0	0	0	0
<b>Total Potential Contaminant Source / Land Use Score - 1000-foot Boundary</b>		<b>6</b>	<b>3</b>	<b>3</b>	<b>6</b>
<b>Cumulative Potential Contaminant / Land Use Score</b>		<b>6</b>	<b>3</b>	<b>3</b>	<b>6</b>
<b>4. Final Susceptibility Source Score</b>		<b>7</b>	<b>6</b>	<b>6</b>	<b>7</b>
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Public Water System Name : **CAMP MIVODEN**  
Public Water System Number : **1280030**

Well : **WELL #2**  
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<b>1. System Construction</b>		<b>SCORE</b>			
Drill Date	1/29/82				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1999			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	NO	1			
<b>Total System Construction Score</b>		<b>4</b>			
<b>2. Hydrologic Sensitivity</b>					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
<b>Total Hydrologic Score</b>		<b>3</b>			
<b>3. Potential Contaminant / Land Use - SANITARY SETBACK</b>		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Sanitary Setback	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
<b>Total Potential Contaminant Source/Land Use Score - Sanitary Setback</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Potential Contaminant / Land Use - 1000-FOOT BOUNDARY</b>					
Contaminant sources present (Number of Sources)	YES	2	1	1	3
(Score = # Sources X 2 ) 8 Points Maximum		4	2	2	6
Sources of Class II or III leacheable contaminants or Microbials	YES	2	1	1	
4 Points Maximum		2	1	1	
1000-foot Boundary contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-foot Boundary	Less Than 25% Agricultural Land	0	0	0	0
<b>Total Potential Contaminant Source / Land Use Score - 1000-foot Boundary</b>		<b>6</b>	<b>3</b>	<b>3</b>	<b>6</b>
<b>Cumulative Potential Contaminant / Land Use Score</b>		<b>6</b>	<b>3</b>	<b>3</b>	<b>6</b>
<b>4. Final Susceptibility Source Score</b>		<b>9</b>	<b>8</b>	<b>8</b>	<b>9</b>
<b>5. Final Well Ranking</b>		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

#### Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility



## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **ASuperfund®** is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100-year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.